March 2009

Transportation System Information Highlights 2008

Publications, Products, Data, Services and Accomplishments

Division

Inside:

The Division of Transportation System Information (TSI) provides a pathway to information about California's transportation system. The focus of expertise is on collecting, maintaining and analyzing information that reflects the characteristics of the state's road system through the production of data, products, services and publications. These products enable intelligent planning, project development, operations and maintenance decisions benefitting the state and local roadway networks.

Publications

The ***California Road System (CRS) Maps*** document the federally approved functional classification (e.g., principal arterial, minor arterial and collector) of state and local roads. Updates to CRS Maps occur to reflect newly approved functional classifications and urban/rural boundaries. Functional classification determines eligibility for and distribution of federal aid funds. Cities and counties routinely use the CRS Maps to classify new roads and update the classification of existing roads.

Continued on next page

Publications Continued…

- ***2007 Place Names in California (Place Names)*** is an annual compilation of statistics and information about the "named places" in California. Place Names contains tables identifying information about each named place including: county, elevation, population, California Road System Map reference number, latitude and longitude, city incorporation date, city code, urban area number and the corresponding Caltrans district number. This information is useful to cities, counties and other state agencies involved in planning and local assistance activities.

- The ***2007 Named Freeways, Highways, Structures and Other Appurtenances in California*** documents annually the historical, memorial and scenic names of state roads and facilities. For each name the following is provided: a description of the facility's location, how and when the facility was named and biographical information on the individual(s) being recognized. The California State Legislature uses this information to help identify locations to honor and memorialize individuals or groups for extraordinary public service or an exemplary contribution to the public good.

- The ***2007 Collision Data on California State Highways (road miles, travel, collisions, and collision rates)*** is a ready reference of lane type, road mile, travel and collision statistics statewide. The data in this annual publication is further organized by Caltrans district and county. The data is a compilation based on law enforcement reports of collisions occurring on state highways which include the combined collision rate trend, fatal plus injury collision rate trend, fatality rate trend graphs, statewide travel and collision rate tables, collision summaries and statewide, district and county travel.

The public can purchase the *2007 Collision Data on California State Highways (road miles, travel, collisions, and collision rates)* through the Caltrans Publication web site at http://caltrans-opac.ca.gov/publicat.htm#C. Caltrans staff can download the publication through the Onramp.

All other publications listed above are available through the TSI web site at www.dot.ca.gov/hq/tsip/.

Products and Data

- The ***Traffic Accident Surveillance and Analysis System (TASAS)*** database is Caltrans' collision reporting system containing specific data for collisions that occur on or are associated with a state highway provided by California Highway Patrol and local law enforcement. Collision record contains a ramp, intersection or highway post mile addresses that are the key to the highway database. TASAS also contains a database of current and historical descriptions of over 15,000 miles of highway segments, 19,000 intersections and 14,000 ramps. Although the TASAS database is not available to the public, the public may obtain the annual *Collision Data on California State Highways (road miles, travel, collisions, collision rates).* The 2007 publication is listed above. Contact: Brad Boehm (Brad_Boehm@dot.ca.gov).

- The annual ***California Motor Vehicle Stock, Travel and Fuel Forecast*** provides forecasts of vehicle miles of travel, vehicle fuel consumption, vehicle fuel economy and registered vehicles for the state of California. These forecasts are organized by county, road system, vehicle body type and vehicle fuel type. This information is used for transportation planning, travel forecasting, air quality modeling and fuel tax revenue projection. Contact: Soheila Khoii (Soheila_Khoii@dot.ca.gov).

- ***Section 500 Reporting*** is an annual federally mandated reporting requirement that compiles and reports state and local transportation income and expenditure statistics to the Federal Highway Administration (FHWA). This product is developed in coordination with other state and local agencies. This helps the federal government understand California's transportation fiscal trends and determine future federal transportation funding available to the state and local governments. Contact: Jahangir Kashkooli (Jahangir_Kashkooli@dot.ca.gov).

- The ***Highway Performance Monitoring System*** (HPMS) is a federally mandated inventory system and planning tool designed to assess the nation's highway system and used in determining the allocation of federal funds to states. In addition, HPMS data serves as a management tool of state and federal governments and local agencies to analyze the highway system's condition and performance. For California, TSI enters and maintains the information stored in the HPMS. The system is also used in travel trends and future transportation forecasts, Environmental Protection Agency air quality conformity tracking and the Biennial Report to Congress on the State of the Nation's Highways. Contact: Brian J. Domsic (Brian_J_Domsic@dot.ca.gov).

Services

- **Statistical Analysis.** TSI provides expertise in statistically sound analysis of transportation planning issues. SAS software is used extensively for data processing, statistical analysis and graphics on most platforms (including mainframes, UNIX and Windows). Contact: Leonard Seitz (Leonard_Seitz@dot.ca.gov).

- **Air Quality Analysis.** TSI supports mobile source air pollutant emissions analysis. TSI assists Caltrans in use of the California Air Resources Board's EMFAC "emission factor" model. TSI also supports estimation of emissions implied by measured or modeled travel. Specifically, TSI developed, maintains and supports use of the Direct Travel Impact Model (DTIM) which calculates emissions based on transportation model results and EMFAC rates. The emissions estimates can be at gridded, hourly detail for ozone modeling or large area totals for State Air Quality Implementation Plan findings. Contact: Leonard Seitz (Leonard_Seitz@dot.ca.gov).

- **Household Travel Surveys.** TSI collects, analyzes and updates the travel behavior related statistical database that will assist planners and engineers in developing travel forecasting, air quality and energy consumption models. With updated travel information, transportation planners, analysts and modelers can examine regional and statewide changes in travel behavior. Contact: Greg Miyata (Greg_A_Miyata@dot.ca.gov).

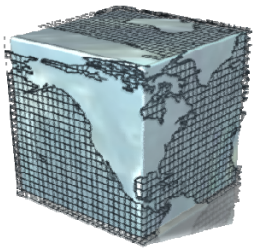
- **Geospatial Information Systems (GIS) Data.** TSI maintains a GIS data library. This data is essential to the production of mapping products throughout and outside of Caltrans. The data library includes data in the following categories:

  - Transportation
  - Other Infrastructure
  - Physical Environment
  - Political/Administration Districts
  - Cultural Geography
  - Imagery

  Each category contains a host of data sets. Each data set has accompanying metadata that describes the dataset, its intended use, the date collected or updated, and a contact who is responsible for the data. The metadata is accessible to the general public at: http://www.dot.ca.gov/hq/tsip/gis/datalibrary/gisdatalibrary.html. Contact: ct_gis_data@dot.ca.gov.

Continued on next page...

Services continued…



- **CT Google Earth.** TSI manages Google Earth Enterprise to facilitate access to a new "Virtual Globe" built using Caltrans data. The client software, which we branded "CT-Earth," is accessible only to Caltrans staff. CT-Earth is a valuable tool for a variety of project work. Images can be extracted and placed in reports, fly-over movies can be made and displayed at public meetings, or can be shared via the Internet. With the use of the data import tool, spatially related work can be easily displayed and shared with internal and external customers. CT-Earth can be downloaded from the web page at http://onramp.dot.ca.gov/hq/gis/project_management/GoogleEarth/index.shtml. Contact: Harold Feinberg (Harold_Feinberg@dot.ca.gov).

- **GIS Software Licensing.** TSI manages Caltrans' GIS software licenses and maintenance agreements, including ArcGIS and Google Earth Enterprise discussed above. This effort saves time and resources. For ArcGIS, we utilize network licensing and monitor actual usage to ensure that the license level is appropriate. Contact: Keith Farnsworth (Keith_Farnsworth@dot.ca.gov).

- **GIS Training.** TSI provides a desktop GIS training program for Caltrans staff using Environmental Systems Research Institute (ESRI) certified Caltrans instructors. There are traditional classroom based programs offered in the various Caltrans regions, supplemented with access to the ESRI virtual training environment on the Internet. The benefits to users are:
  - Expediting delivery of authorized ESRI GIS training
  - Lowering vendor service costs
  - Minimizing staff travel impact
  - Orienting future training towards local GIS development

  Contact: Keith Farnsworth (Keith_Farnsworth@dot.ca.gov).

- **Linear Referencing System (LRS).** TSI maintains the Caltrans LRS, which allows the user to locate points, road segments and events geographically and reference a position located by coordinates or latitude/longitude to the Caltrans post mile system. TSI maintains the map road layer and a set of reference points statewide that keep the post mile location function up to date. Contact: Alan Kepler (Alan_Kepler@dot.ca.gov).

- **Post Mile Web Services.** Utilizing the LRS, TSI maintains a post mile web service to allow ease of use and quick reference for communication between different functions (e.g., Caltrans Divisions) and systems (ArcMap Postmile Toolbar, Web Browser Postmile Query Tool and Batch Postmile Query Tool). The web service provides the ability to validate a postmile, locate a point or highway segment, look up a post mile at a particular location and convert between latitude/longitude and county/route/postmile formats. Information accessing the post mile web service can be found at http://onramp.dot.ca.gov/hq/gis/applications_branch/applications_tools/applications_tools.shtml**.** Contact: Harold Feinberg (Harold_Feinberg@dot.ca.gov).

Continued on next page…

Services continued…

- **GIS Coordinators Committee.** TSI leads the Caltrans GIS Coordinators Committee, which includes a representative GIS coordinator from each district and interested program in Caltrans. These coordinators serve as focal points for communication and distribution of GIS information and issues. A list of current coordinators is available at http://www.dot.ca.gov/hq/tsip/gis/datalibrary/GISCOORDINATORS.pdf.

- **Technical Assistance and Training for Micro, Meso and Macro Transportation Modeling.** TSI works with Caltrans and other state agencies staff to provide training in the best practices for collecting data; developing micro, meso and macro transportation models; demonstrating and performing calibration and validation; and teaching and reviewing complex analysis of the various outputs. Contact: Doug MacIvor (Doug_MacIvor@dot.ca.gov).

- **Legislative Services**. TSI provides legislative services for changes to the statutory description of state highways and the memorial naming of state highway facilities. Each year changes in the state highway system occur because of relinquishments, adoptions or realignments. This results in changes in the legislative route description described in the California Streets and Highways Code. TSI reviews and analyzes bills related to changes to route descriptions and memorial naming of highways; therefore, updated and correct state highway information is available to the public. Contact: Navneet Singh (Navneet_Singh@dot.ca.gov).

- **Project Delivery Output.** This is a new TSI service. Data, such as lane miles constructed or rehabilitated and other deliverables, are collected annually. The Caltrans Delivery Plan serves as the basis for outputs. This information greatly enhances the ability to report accurate project delivery outputs information to Caltrans directorate and help the citizens of California understand their investment in mobility. Contact: Mark Samuelson (Mark_Samuelson@dot.ca.gov).

- **Functional Classification.** TSI maintains and updates functional classification data used to aid planning activities and help determine federal funding. This information also supports federally mandated HPMS reporting requirements. TSI partners with local agencies, Caltrans districts and FHWA in this effort. Information is available at http://www.dot.ca.gov/hq/tsip/hseb/func_clas.html. Contact: Navneet Singh (Navneet_Singh@dot.ca.gov).

Accomplishments

- At the request of local agencies, TSI sought and received Federal Highway Administration approval for more than 300 functional classification changes during the 2008 calendar year. Once accomplished, local agencies are then eligible for more federal funding from the gas tax on these routes.

- TSI developed a legislative proposal to update the statutory descriptions of California State Highway System routes. The location and/or extent of some routes within the California State Highway System have changed due to relinquishment to local jurisdictions. The legislative proposal identified those routes that have undergone changes and updated their descriptions so that they will be accurately described in state statute. The legislative proposal was submitted to Caltrans Legislative Affairs. We anticipate that it will be introduced as a bill and approved by the California State Legislature in the next session.

- The TASAS Branch was incorporated into TSI to optimize interaction between the post mile network, highway inventory, collision coding, GIS and highway performance monitoring activities. An IT Concept Paper, IT Purchase Plan, Request for Offer and Purchase Request were developed as part of the process to hire consultants to perform a business process review.

- GIS instructor-led training was provided to over 190 Caltrans staff. ESRI online GIS training was delivered to over 50 staff, including live online classroom training for three TSI Office of Geospatial Information Systems (OGIS) staff. An additional ESRI authorized trainer was developed and a new ESRI course was added to the Caltrans course offerings. GIS server technology training was provided for OGIS and District 8 staff. The Caltrans North Region was assisted by providing training for certification for staff. Caltrans Division of Aeronautics student assistants were trained on use of a new ArcGIS tool.

- TSI initiated a collaborative server/GIS software testing effort with Districts 11 and 7 for ArcGIS Server 9.3 (previously unimplemented on the Caltrans network). This collaborative testing is in lieu individual units purchasing an independent license for $25,000; then, implementing and maintaining systems.

Continued on next page

Accomplishments continued…

- Two staff positions were transferred to Caltrans Information Technology to create a unit in the Information Technology Solutions Division supporting GIS technology activities.

- Google Earth Enterprise was implemented, staff was trained in its use, and we released the first version of our own Caltrans virtual world. TSI also developed and implemented a Google Earth customer support Intranet page with the enterprise client download, installation instructions, Frequently Asked Questions and links to related resources. Staff used their training to incorporate high resolution imagery available from Sacramento Area Council of Governments, Los Angeles and San Diego.

- Web-based training for micro-simulation modeling was developed in partnership with University of California, Irvine. This training is available to Caltrans, Metropolitan Planning Organizations, Regional Transportation Planning Agencies and other state agencies at no cost.

- TSI hosted the first Transportation Research Board Conference on “Data for Goods Movement Impacts on Air Quality” in partnership with California Air Resource Board. The next conference is scheduled September 2009.